

Claims

1. A quasi slanted fiber Bragg grating comprising a first refractive index grating portion formed on the core of an optical fiber to have a grating vector slanted with respect to the fiber principal axis thereby to reflect incident light selectively with a reflection factor of 90 % or more and to make the loss due to the coupling to a clad mode, less than 5 dB.
2. A quasi slanted fiber Bragg grating comprising a second refractive index grating portion formed on the core of an optical fiber to have a grating vector slanted with respect to the fiber principal axis thereby to reflect incident light selectively with a reflection factor of 10 % or more and to make the loss due to the coupling to a clad mode, 5 dB or more.
3. A multiple series fiber Bragg grating comprising: a third refractive index grating portion formed on the core of an optical fiber to have a grating vector in parallel with the fiber principal axis thereby to reflect incident light selectively with a reflection factor of substantially 100 % or more and to make the loss due to the coupling to a clad mode, less than 5 dB; and at least any one of such a fourth refractive index grating portion, the first refractive index grating portion of Claim 1 and the second refractive index grating portion of Claim 2 formed in series with the third refractive index grating portion, wherein the fourth refractive index grating portion has a grating vector slanted with respect to the fiber principal

axis thereby to reflect incident light selectively with a reflection factor less than 10 % and to make the loss due to the coupling to a clad mode, 5 dB or more.

4. A multiple series fiber Bragg grating comprising: the fourth refractive index grating portion of Claim 3 formed in the core of an optical fiber; and at least any one of the first refractive index grating portion of Claim 1, the second refractive index grating portion of Claim 2, the third refractive index grating portion of Claim 3 and the fourth refractive index grating portion of Claim 3 formed in series with the fourth refractive index grating portion.

5. A multiple series fiber Bragg grating comprising: the first refractive index grating portion of Claim 1 formed in the core of an optical fiber; and at least any one of the first refractive index grating portion of Claim 1, the second refractive index grating portion of Claim 2, the third refractive index grating portion of Claim 3 and the fourth refractive index grating portion of Claim 3 formed in series with the first refractive index grating portion.

6. A multiple series fiber Bragg grating comprising: the second refractive index grating portion of Claim 2 formed in the core of an optical fiber; and at least any one of the first refractive index grating portion of Claim 1, the second refractive index grating portion of Claim 2, the third refractive index grating portion of Claim 3 and the fourth refractive index

grating portion of Claim 3 formed in series with the second refractive index grating portion.

7. A multiple series fiber Bragg grating comprising: the first refractive index grating portion of Claim 1 or the second refractive index grating portion of Claim 2 having a predetermined slant angle and formed in the core of an optical fiber; and the first refractive index grating portion or the second refractive index grating portion having a slant angle of an inverse sign opposite to that of the first-named slant angle and formed in series with the first refractive index grating portion or the second refractive index grating portion.

8. An optical fiber type coupler comprising a port, wherein said port includes either the quasi slanted fiber Bragg grating of Claim 1 or Claim 2, or any one of the multiple series fiber Bragg gratings of Claim 3 to Claim 7.

9. An optical connector comprising either the quasi slanted fiber Bragg grating of Claim 1 or Claim 2, or any one of multiple series fiber Bragg gratings of Claim 3 to Claim 7 packaged therein.